Proposal Reviews

#226: Drumheller Slough Habitat Restoration

US Fish and Wildlife Service

Initial Selection Panel Review	
Research and Restoration Technical Panel Review	
Sacramento Regional Review	
External Scientific Review	#1 #2 #3 #4 #5
Prior Performance/Next Phase Funding	#1 #2
Environmental Compliance	
Budget	

Initial Selection Panel Review:

CALFED Bay-Delta 2002 ERP PSP
Initial Selection Panel Review

Proposal Number: 226

Applicant Organization: US Fish and Wildlife Service

Proposal Title: Drumheller Slough Habitat Restoration

Please provide an overall evaluation rating.

Explanation of Recommendation Categories: Fund

- **As Is** (a proposal recommended for funding as proposed)
- **In Part** (a proposal for which partial funding is recommended for selected project phases or components)
- **With Conditions** (a proposal for which funds are recommended if the applicant contractually agrees to meet the specified conditions)

Consider as Directed Action in Annual Workplan (a proposal addressing a high priority action that requires some revision followed by additional review prior to being recommended for funding)
Not Recommended (a proposal not currently recommended for funding-after revision may be considered in the future)

Note on "Amount":

For proposals recommended as Fund As Is, Fund In Part or Fund With Conditions, the dollar amount is the amount recommended by the Selection Panel.

For proposals recommended as Consider as Directed Action in Annual Workplan, the dollar amount is the amount requested by the applicant(s).

Fund	
As Is	**-**
In Part	**-**
With Conditions	**-**
Consider as Directed Action	**-**
Not Recommended	**X**

Amount: **$0**

Conditions, if any, of approval (if there are no conditions, please put "None"):

None

Provide a brief explanation of your rating:

The ecosystem value of Sacramento River riparian habitat restoration is acknowledged as high, but the revegetation approach in the proposal was not regarded as novel nor potentially information rich. The proposal overall lacked rigorous experimental design.

Research and Restoration Technical Panel Review:

CALFED Bay-Delta 2002 ERP PSP
Research and Restoration Technical Panel Review Form

Proposal Number: 226

Applicant Organization: US Fish and Wildlife Service

Proposal Title: Drumheller Slough Habitat Restoration

Review:

Please provide an overall evaluation summary rating:

Superior: outstanding in all respects;
Above Average: Quality proposal, medium or high regional value, and no significant administrative concerns;
Adequate: No serious deficiencies, no significant regional impediments, and no significant administrative concerns;
Not Recommended: Serious deficiencies, significant regional impediments or significant administrative concerns.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Superior	**The work proposed focuses on an important site and it would be useful to link bird and plant responses to restoration practices. Unfortunately, the details on the methods were sketchy. There was inadequate attention paid to experimental design and rigorous, quantitative evaluation of outcomes. This is a project that could be quite successful if methods are clearly outlined, design refined, and the costs reigned in.**
-Above average	
XAdequate	
-Not recommended	

1. **Goals and Justification.** Does the proposal present a clear statement of goals, objectives and hypotheses? Does the proposal present a clear justification and conceptual model for the project?

   Their goals include restoration of shaded riverine habitat increasing connectivity of riparian forests in the area, and improving habitat for several at risk species and native plants. Work at this site is justified based on the importance of the site. However, the goals are only vaguely linked to specific tasks. Further, the experimental design is not yet in place for this work suggesting that a true hypothesis-testing framework is not yet being considered.

2. **Likelihood of Success (Approach, Feasibility, Capabilities and Performance Measures).** Is the project likely to succeed based on the approach, feasibility and project team capabilities? Are the proposed performance measures adequate for measuring the project's success?

Reviewers noted that while much of the monitoring work could yield useful information, we cant evaluate if it will. This is largely because rigorous experimental or sampling designs with associated statistical analyses are not in the proposal. In general, panelists found the details of the methods only vaguely outlined with a lack of references or specific details. One external reviewer was generally impressed with the proposal and ranked it E but noted the work was not novel and felt the proposal lacked a clear explanation of what determined the planting decisions.

For some of the project goals, the performance measures are clearly and appropriately indicated; this is a strength. On a few however, their performance measures are not adequate. Quantitative measures (targets) of success need to be made up front (although they do identify 70% survival of plants as success) -- which bird species are conservation targets? In short, as one reviewer put it: the approach is not fully documented but technically feasible. So we are left to trust the PIs that their approach is adequate.

The PIs appear to be well qualified.

3. **Outcomes and Products.** Will the project advance the state of scientific knowledge in general and/or make an important contribution to the state of knowledge of the Bay-Delta Watershed? For restoration proposals, is the project likely to contribute to ecosystem restoration or species recoveries in a significant way? Will the project produce products useful to decision-makers and scientists?

   The value of this work is that if they increase the connectivity of high quality habitats this should enhance the success of natives (over non-natives). Interpretative outcomes are not described in the proposal but the reviewers would hope that the PIs would fully document their findings in reports, and preferably in publications. If the project is successful and the work published, this should be valuable to managers --- lessons could be learned about restoration success through monitoring bird populations and investigating the influence of site conditions and planting density on plant survival.

4. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   The costs are high given the amount of acreage involved. Relative to the likelihood of quantifiable outcomes, the cost/benefit ratio is very high.

5. **Regional Review.** How did the regional panel(s) rank the proposal (High, Medium, Low)? Did the regional panel(s) identify significant benefits (regional priorities, linkages with other activities, local involvement) or impediments (local constraints, conflicts with other activities, lack of local involvement) to this proposal? What were they?

   This was ranked as high priority by the Sacramento Regional Review panel. They state that active management including planting of 135 acres and control of invasives will contribute to habitat values for species of concern while allowing river function.

6. **Administrative Review.** Were there significant concerns about the proposal with regard to the prior performance, environmental compliance and budget administrative reviews? What were they?

   No time or funds are allocated to environmental compliance that is identified in Figure 6 of the proposal.

Miscellaneous comments:

None

Sacramento Regional Review:

Proposal Number: 226

Applicant Organization: US Fish and Wildlife Service

Proposal Title: Drumheller Slough Habitat Restoration

Overall Ranking: **-**Low **-**Medium **X**High

Provide a brief summary explanation of the committee's ranking:

The panel felt this a good proposal, proponents need to diligently follow through on monitoring.

1. Is the project feasible based on local constraints?

   XYes **-**No

   How?

   Project proponents have demonstrable record of similar projects in the local area and have closely coordinated with local interest groups and restoration plans

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

   XYes **-**No

   How?

   Project addresses Restoration Priorities for the Sacramento Region #1, "Develop and implement habitat management and restoration actions in collaboration with local groups such as Sacramento River Conservation Area Non-Profit Organization; #2, Restore fish habitat and fish passage, particularly for spring-run chinook salmon and steelhead trout and conduct passage studies"; #4, "Restore geomorphic processes in stream and riparian corridors"; #5, "Implement actions to prevent, control and reduce impacts of non-native invasive species in region".

   Active management, including planting of 135 acres and control of invasives will contribute to the habitat values for species of concern while allowing river function.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

   XYes **-**No

   How?

   Project is part of ongoing restoration efforts in area by proponents while in consonance with the developing coordinated restoration management plan being implemented by the USFWS Sac. Refuge. Additionally, the project is within the guidelines of the Sacramento River

Conservation Area, and has been presented to the SRCA Board.

4. Does the project adequately involve local people and institutions?

   XYes **-**No

   How?

   Proponents have worked with local institutions/groups/individuals and in particular the Sacramento River Conservation Area. Project is coordinated with ongoing agency efforts (CDFG, USFWS) and will coordinate and evaluate hydraulic impacts to up- and downstream landowners. An essential component of effects to adjacent landowners will be the potential long-term impacts to the newly installed RD 1004 pump station and fish screen.

Other Comments:

External Scientific: #1

Research and Restoration External Scientific Review Form

Proposal Number: **226**

Applicant Organization: **US Fish and Wildlife Service**

Proposal Title: **Drumheller Slough Habitat Restoration**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;
Good: quality but some deficiencies;
Poor: serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**Actually I would rate it between excellent and good if that option was available. Overall this sounds like it will be a successful restoration. My only issue was with the depth of description of the restoration plan, experimental design, and monitoring, which the applicants could address in a revised scope and budget if the project were selected for funding.**
XGood	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   On p. 2 of the proposal, the goals and objectives are clearly stated. The main goal is to restore 135 acres of fallow land to riparian forest and woodland, which includes establishing 2000 feet of stream bank vegetation. Most of the other goals are really outcomes of the restoration project, which include providing additional riparian corridor along the Sacramento River, improving on a unit of the Sacramento River National Wildlife Refuge (SRNWR), and reducing erosion and improving water quality. The last three goals are to demonstrate the effectiveness of restoration techniques and involve the public in the process. Based on the Problem description on pp. 1-2, these goals and objectives seem timely and important. The vast majority of historical riparian forest along the Sacramento River has been destroyed, impacting a diverse assemblage of threatened and non-threatened species.

Additionally, the proposed project site, Drumheller Slough, is stated to have extensive populations of noxious invasive species (NIS). Restoration of the site would help reduce the abundance of NIS as source populations and create Shaded Riverine Aquatic (SRA) bank habitat that will be beneficial to aquatic species, including steelhead trout and Chinook salmon. Restoration now will prevent additional impacts due to spread of NIS and reduced populations of fish and other species. The hypothesis stated on p. 2 is not set up as a statistically testable hypothesis, but rather seems to be a statement of the desired outcomes of the project. There is no experimental design in the project to test the hypothesis that active restoration will increase shaded riverine aquatic (SRA) habitat, reduce habitat fragmentation, etc. Perhaps that is often the nature of restoration projects, but I think it is possible to scientifically test the effects of the restoration on at least some of the desired outcomes. On p. 10, the proposal does say that the restoration plan will incorporate an experimental design for testing the effect of vegetation on natural processes. However, the design is not described (e.g. number and arrangement of plots and treatments), nor is the term natural processes, and hypotheses to be tested by this experiment are not given.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   The project is justified because there is a large-scale effort by a number of groups to restore ecosystems along the Sacramento River. Because the project involved the USFWS, this project would be conducted in conjunction with and tie in nicely with other projects throughout the SRNWR. The conceptual model is a fairly detailed evaluation of the ecological factors relating to the success of restoration. The potential negative effects of rodents, larger browsers, and non-native species are recognized. The abundance of NIS at the site is stated, but no quantitative data on the abundance of native and non-native species are presented. The proposal applicants have some previous experience with restoration at other sites, upon which they base their predictions that if the site is not restored, native recruitment will be very slow. They also provide evidence from other studies that rodent populations in fallow lands are very high, that these animals eat acorns and girdle young plants, and that native vegetation may reduce rodent populations and speed up regeneration of native vegetation. My main concern about the conceptual model is that little on-site information about biota is included. This might include: maps or abundance surveys of plant community types and species (including native and non-native species); surveys of rare, threatened, or endangered species; rodent, deer, and rabbit surveys; and usage of the site by other wildlife. The two photos of the site are of extremely poor quality and give no indication of the site vegetation other than that it has few trees. Also, the statement that plant competition for sunlight and rodent and herbivore pressure are higher at mid-elevations than low elevations (bottom p. 2) is not supported and seems unlikely. The selection of this project as a full-scale implementation project is justified because the applicants have experience in restoring over 1000 acres of riparian habitat since 1999 (p. 24). Therefore, the restoration techniques are probably fairly well developed. The flip side of this recent experience, however, is that the long-term success of this type of restoration is not known. The applicants say on p. 9 that trees will likely reach 30 ft height after three years (which seems like a lot to me); will these and other planted species survive after irrigation stops? Long term monitoring is mentioned but not clearly described in the proposal.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

The approach includes the important task of conducting a hydraulic assessment to avoid third party impacts and stresses local involvement, which is positive. Additionally, the list of tasks for implementation is comprehensive (pp. 10-11). Where the approach falls short is providing details of the activities that would occur under each task. For example, in the hydraulic study, how will hydrology be assessed and models developed? In the Site Assessment, how will baseline soils, hydrology, biotic, and historic conditions be evaluated? Perhaps most significantly, one of the tasks is to develop a restoration plan. I would have thought that the proposal would essentially be the restoration plan, and include the restored community types and planting, irrigation, and weed control strategies to be used. Another concern about the approach is that monitoring is described for only the three years of the project. Long term monitoring by USFWS is mentioned (pp. 11 and 16) but it is not clear if this monitoring will be done at the project site, and the details of monitoring are not spelled out (e.g., what will be monitored, for how long, what techniques, monitoring design, etc.). Since irrigation will be stopped after 3 years, it seems likely that some of the planted vegetation will die when conditions become drier. Additionally, NIS may continue to colonize the site. I would think that monitoring for at least 5 years and as many as 20 years is necessary. If site conditions become less desirable, mitigative action could then be taken. I recognize that CALFED could not fund long term monitoring, but some kind of plan for monitoring is necessary, e.g., involvement of volunteers and participation by USFWS. While not spelled out clearly in the proposal, the project could generate valuable information for use in implementing and justifying future restoration projects. This might include successful planting techniques, the effectiveness of planting native grasses in controlling NIS, and increases in biodiversity of plant and animal communities. However, to do this, the project must have clear, quantitative, and scientifically valid studies of pre- and post-restoration conditions, long-term planting success, and experiments of grass planting treatments on NIS. Such studies are not clearly described in the proposal.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The approach is not fully documented, as describe above, but it is technically feasible. Based on the experience of the applicants at other sites, it is likely to have at least short-term success. The longer-term success of the project is uncertain, and not explicitly dealt with in the form of long-term monitoring and mitigation.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   The monitoring program described in the proposal contains the appropriate elements necessary to evaluate the success of the program over the three-year project period. In particular, the tree monitoring described should provide an accurate assessment of planting survival over the three-year period. The avian surveys described should also provide valid assessment information. There is inadequate description of the native grass survey to evaluate whether it will provide enough information. As mentioned earlier under Approach, plans for long-term monitoring are not clearly spelled out in the proposal.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

As described under Approach, the project could generate valuable information for use in implementing and justifying future restoration projects (e.g., successful planting techniques, the effectiveness of planting native grasses in controlling NIS, and increases in biodiversity of plant and animal communities). These findings should be fully documented in annual and final reports, and disseminated to interested parties during the three work and/or field days proposed. I also would urge the applicants to publish their findings in technical journals or newsletters and create a project web site to further disseminate the important results of the project. Interpretative outcomes are not described in the proposal.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   The project team has experience in restoring over 1000 acres of riparian ecosystems since 1999, which likely provided the team with a substantial amount of technical capability to complete the restoration. Additionally, individual staff members of Sacramento River Partners and SRNWR have extensive experience with habitat restoration. Additionally, experts and specialized consulting firms will become involved in certain aspects of the projects. Overall, the team seems to be quite capable of successfully carrying out the restoration project.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   Overall the budget seems reasonable based on the substantial area to be restored (135 acres) and the monitoring and construction activities that will be included in the project.

Miscellaneous comments:

External Scientific: #2

Research and Restoration External Scientific Review Form

Proposal Number: **226**

Applicant Organization: **US Fish and Wildlife Service**

Proposal Title: **Drumheller Slough Habitat Restoration**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
-Excellent	**My overall evaluation of this project is "good." I think that the project has strong conservation merit and there is an opportunity to learn lessons about restoration success through monitoring of the bird populations and investigating the influence of site conditions and planting density on the survival of planted trees. Riparian habitat is highly valuable for many plant and animal species and there is the potential for restoring habitat for several at risk or endangered species. The location of the project is strategic, in that restoration of this site will connect a natural forest remnant to the north with other restoration projects to the south, thus reducing fragmentation in the riparian corridor of this portion of the Sacramento River. The restoration plan seems well-thought out and orderly. The past track record and expertise of the applicants suggests that the project has a high probability of success. My only criticisms are that more specific monitoring targets should be established as measures of success, and that all of the restoration endpoints hypothesized to benefit from this project (e.g., improvements of shaded riverine aquatic habitat, habitat for the endangered beetle and garter snake, etc.) should be monitored (and have clear monitoring plans specified).**
XGood	
-Poor	**My only other reservation regards the high cost involved with active restoration through the large-scale, agricultural-style planting of trees, rather than utilizing natural processes (flooding, etc.) in the restoration. However, the authors give a fairly strong justification of the need for active restoration. Large-scale planting may be particularly necessary for successful establishment of valley oak and for overcoming some particularly noxious exotic species, like giant reed. Such techniques are not really necessary for cottonwood and willow, given the natural recruitment that is already occurring.**

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The goals, objectives, and hypotheses are generally clear, although their statement varies slightly in different parts of the document. Basically, the hypothesis is that active restoration (i.e., large-scale planting of trees, etc.) of riparian habitats will result in meeting the goals, which include restoration of shaded riverine aquatic habitat, increasing connectivity of riparian forests in the area, and improving habitat for several at risk species (including one or more endangered species) and native plant communities. The statement of the hypotheses in the executive summary directly mentions restoration of habitat for at risk or endangered species, such as the Valley Elderberry Longhorn Beetle (VELB), birds, and the Giant Garter Snake. Riparian forest restoration, and with it, restoration of habitat for at risk species, is clearly an important and timely topic.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

The conceptual model emphasizes that active restoration (i.e., tree and shrub planting, grass planting, control of exotics) is necessary for timely recovery of the site to high quality natural functioning. The authors present good justification for active restoration of mid-elevation riparian vegetation (using valley oak as an example), in that existing stressors (exotic plant species and herbivorous rodents) are otherwise likely to retard natural site recovery. Full implementation does appear to be appropriate here, since restoration of the site in and of itself would be of high ecological value, in terms of providing high quality habitat locally and in providing connectivity with other restored or natural sites. There also appears to be potential for learning how to improve other restoration activities from the lessons learned on this project.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   The approach is well designed, orderly, and appropriate for meeting the main objective, restoration of the riparian vegetation. The authors outline a reasonable approach for site restoration, with a hydrologic study, site assessment (including hydrologic, edaphic and ecological considerations), and a restoration plan, laying the context for the active restoration activities. Results from monitoring of tree/shrub survival, native grass response, and bird population responses could yield useful information for future restoration projects and for assessing the success of this one. The spatially-explicit monitoring of planted tree/shrub survival could yield important information for future restorations, if the results are analyzed statistically in relation to the underlying site factors (soils, hydrology), the plant species, and the planting density. The relatively strong investment in monitoring the bird community could provide useful data for tracking the long-term success of the restoration on this site, as well as providing reference information for assessing the success of other restoration projects. In addition, information on success of the native grass plantings could be useful. The authors also mention plans for future studies on vegetation and geomorphic processes as part of the restoration plan and vegetation planting scheme. Monitoring the effects of planting densities on vegetation recovery or geomorphic processes would be useful for planning future restoration activities. However, no other details of these experiments are presented in the proposal.

   One thing that is missing from this section is more information on what the native species are that will be planted, and what the overall density of planting will be. The only species listed are cottonwood, willow, elderberry, and valley oak. The species of native grasses are not listed. However, the authors acknowledge that the actual planting design will be decided based on consideration of the hydrologic, edaphic, and ecological site characteristics.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The feasibility of success appears to be high on this project, given the approach and apparent experience of the organizations in carrying out riparian restoration projects. The scale of the project does fit the objectives, particularly since restoration of this site will increase the local connectivity to adjacent riparian habitats. The only question is whether so much intensive propagation and planting of trees is really essential. However, the authors give good justification of this with their conceptual model. They also appear to have had experience with other large-scale restoration projects that involved extensive planting.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   The proposed performance measures are sufficient for determining success of most, but not all, of the stated project goals. Spatially-explicit planting records and monitoring of plant survival will be particularly useful for assessing restoration success, as will monitoring of native grasses and bird populations. The monitoring of bird populations will be carried out by personnel from Point Reyes Bird Observatory, a scientifically-recognized organization with a good track record of research and monitoring of birds. Although these aspects of the monitoring plan appear to be strong, the project would benefit from monitoring of other stated restoration targets, such as shaded riverine aquatic habitat, decreases in exotic plants, and particularly the effects of restoration on the two endangered species - the Valley Elderberry Longhorn Beetle (VELB) and the Giant Garter Snake. The stated hypothesis of the project (in the executive summary) was that restoration would benefit these conservation endpoints and says that periodic monitoring will be performed, but there are no further details on monitoring the VELB or Garter Snake populations in the rest of the proposal. In addition, although the monitoring approaches sound reasonable, no specific or quantitative measures of success are given (except perhaps the expectation of > 70% tree survival). Although it is generally understood that high survival of planted shrubs and trees, increases in native grasses, and increases in bird diversity are all good things, it would be helpful if more specific performance goals were defined (i.e., which bird species are conservation targets, what are more specific measures of success, etc.). There is mention of some other long-term monitoring, referred to as Refuge Restoration Monitoring for vegetation changes, successional trajectories, and wildlife use. While it is encouraging to hear that some longer-term monitoring is planned, not enough information is given of the nature of the monitoring to enable an assessment of it. Thus, although the monitoring plan looks strong overall (particularly for birds and the survival of planted vegetation), measures of success and details on how some of the other targets will be monitored could be stated with greater specificity.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   The product of greatest value will be the restoration of the site to natural vegetation communities, and with it, provision of habitat to several at risk animal species. The probability of success appears to be high, given the approach and past restoration experience by the organizations. Monitoring of bird population responses (including nesting success) and of the success of plantings will be valuable for determining the success of the restoration approach and informing future restoration projects.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   The project team appears to be highly qualified and experienced in restoration of riparian habitats. The US Fish & Wildlife personnel and the Sacramento River Partners have been involved with several other restoration projects funded by CALFED and CVPIA, including other projects with active restoration of riparian habitat through planting. This project appears to be a piece of a much larger goal by USFWS and SRP to restore much of the riparian corridor on the Sacramento River. The agricultural infrastructure still on the site will aid the planting effort and

the involvement of the Sacramento River Partnership will help in terms of restoration expertise and a long-term commitment to maintain the site. As mentioned previously, use of personnel from the Point Reyes Bird Observatory should ensure a high quality assessment of bird population and community responses to the restoration.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   The project is somewhat expensive, primarily because of the high costs of plant propagation and planting. Cost of the restoration is approximately $5300 per acre over the entire term of the project. However, as explained in the justification section, active restoration through planting does appear to be important for rapid rehabilitation of the site and its ecological function. The benefit of this project is also potentially quite high, both in terms of restoring a mosaic of high quality riparian habitats that may benefit rare and endangered species and in terms of enhancing the landscape connectivity of existing adjacent restored or protected areas.

Miscellaneous comments:

External Scientific: #3

Research and Restoration External Scientific Review Form

Proposal Number: **226**

Applicant Organization: **US Fish and Wildlife Service**

Proposal Title: **Drumheller Slough Habitat Restoration**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**This is a good proposal if the only product needed is the restoration of one site. There are not many new items/additional products in this proposal such as establishing BMP's for the watershed.**
XGood	
-Poor	

1. **<u>Goals.</u>** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   Good, yes,yes.

2. **<u>Justification.</u>** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   Good, yes, yes.

This project will not provide a lot of new information.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   Fair, yes, no, no, some

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   Very good, yes, good, yes.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   Very good, yes, yes.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   Fair, yes - restoration of one site, no, not many interpretative outcomes likely.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   Excellent, good, yes, yes.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   Excellent, yes, yes.

Miscellaneous comments:

External Scientific: #4

Research and Restoration External Scientific Review Form

Proposal Number: **226**

Applicant Organization: **US Fish and Wildlife Service**

Proposal Title: **Drumheller Slough Habitat Restoration**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**This proposal is not well written in comparison to other submitted. Few details are provided on how the replanting will occur and what specific approaches will be used. The aspects of herbivory (rats on acorns, etc.) that is so heavily emphasized in the introduction is not dealt with in the proposal other than to say if they increase natives things will improve.**
-Good	
XPoor	

1. **<u>Goals.</u>** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   4 the proposal is not as well written as many of the others in the competiton. Goals and objectives are written but are not linked directly in most cases to what is proposed to do. They are merely broad statements of what is hoped for after weeding and replanting. The hypotheses are not laid out in a way that they can truly be tested and they have yet to determine their experimental design.

2. **<u>Justification.</u>** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

The Drumheller area is one of importance and some of the existing circumstances justify this site for restoration: the land is in public trust as part of the SR Natl Wildlife Refuge. An agreement has already reached to remove prune orchard and to plant winter wheat for waterfowl.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   This aspect of the proposal is also not clearly presented. Overall the plans and methods are only vaguely outlined. The reader is left to trust the investigators that their methods will work we are told repeatedly that their past work proves they can do this. However, we are not given references to past work (publications) nor data to evaluate ourselves. Had the specific methods been described in detail as was done in other proposals, we could have evaluated this adequately. Thus, the below average score reflects lack of proposal depth and clarity.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   It is impossible to judge given the very vague and sketchy nature of the proposal. E.g., page 9 our cultural practices reduce plant competition., our planting design maintains the natives.. But they do not spell out what these practices or designs are.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   Measures are specified and include plant survival, native vs. nonnative cover, and avian monitoring. This aspect was fairly strong.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   The product will be, if successful, restoration of the plants in this site. There is no evidence that methods are being developed that will translate to other systems. Further, any outreach that is conducted (which is suggested but not described in the proposal) for this project appears to be local and we will not be able to evaluate the impact of this outreach (unless they have plan with success metrics that are not in the proposal).

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   From what is provided the team is certainly well qualified and has done past restoration work as well as some research (as noted by publications of some). Unfortunately their expertise does not come through in the proposal details.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   this is hard to evaluate given the lack of details. The probability of success cannot be evaluated which influences the cost/benefit ratio.

Miscellaneous comments:

External Scientific: #5

Research and Restoration External Scientific Review Form

Proposal Number: **226**

Applicant Organization: **US Fish and Wildlife Service**

Proposal Title: **Drumheller Slough Habitat Restoration**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
XExcellent	**This is very high quality work, with a high chance of success. The approaches are based on sound ecological principles and past experience.**
-Good	
-Poor	

1. **<u>Goals.</u>** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   Yes, the goals, objectives, hypotheses are very clearly stated and consistent. The concepts are very timely in terms of the dual purposes of wildlife habitat, threatened species, and water quality restoration and protection.

2. **<u>Justification.</u>** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

The study is definitely justified relative to, not just existing knowledge about threatened wildlife species and non-native invasive plants, but also to existing neighboring conditions, connectivity to other wildlife preserves. The conceptual model is clearly stated and supports the proposed work. This is a full-scale implementation project, and it is fully justified.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   The approach is well designed and will allow them to meet the objectives. Results of the monitoring of established plant communities will contribute useful information on the relationship between hydrologic/edaphic conditions and plant adaptation. This information will improve prediction of the success of other restoratino efforts in the Sacramento River basin. This will be useful to decision-makers in land resource agencies and private conservation groups who are involved with restoration projects. There was not much described in this proposal of a novel nature, since the project was heavily geared toward stratight-forward restoration of a particular site. What did intrigue me, however, was their plan to use their own dBase IV program to help plan the planting scheme and to track the success of the planting scheme. Such a program could be very useful for other restoration projects. One point that I wish the authors had explained better was how the results from the Site Assessment phase (hydrologic/edaphic characteristics) lead to actual planting decisions. For example, which species do they anticipate establishing in the wettest areas, and so to the better drained sites. Which site characteristics will the grasslands, shrubs, trees, willows, oaks, etc. be targeted to? I am forced to take their word that they are correctly matching up species groups with soil hydrology characteristics.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   Feasibility is high, based on their past performance, and time scale is appropriate. Success is highly likely, but I do have a few concerns about the proposed project. 1. They propose to revegetate only one stream bank. The other side of the river is outside the target site; however, restoring only one bank may not provide the riverine habitat desired for the fish. The bank on the other side for that portion of the river that runs due north and south has a highway near it and very little vegetation. Therefore, the main effect of this project will be to provide excellent terrestrial wildlife habitat for aht large part of that field, but the benefit in the riparian portion will be relatively small, and therefore the positive impact on water quality will be limited. The scale is good and important for connectivity to adjacent habitats to the north and south and is large enough to integrate the different community types (savanna, woodland, etc.); however, a project that covered both banks of the river would offer greater continuity, stability, and connectivity. The land on the opposite side of the river is not available for this project, and the authors came up with the best plan possible considering that limitation. 2. A second concern is the possibility that rodents will eat the acorns that are surface planted. The authors made reference to this limitation to oak establishment, but did not specify what measures they will take to avoid that problem. 3. The description of plant establishment is not very detailed. For example, more detail on planting method for the native grasses would allow have allowed me to better evaluate whether their methods will indeed succeed at keeping the non-native invasive species suppressed.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans

explicit and detailed enough to determine if performance measures will be adequately assessed?

Yes, the performance measures are appropriate with good detail for vegetation and avian species, but no mention is made of assessing success of fish species in the stream. Monitoring plans are excellent and detailed.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   Connected habitat increases chances of successful and sustainable vegetation and wildlife habitats. Success of native grass establishment will help in suppressing the spread of giant reed. This project will be able to determine the ability of their method of vegetation restoration in attracting, protecting, and sustaining growing populations of wildlife. Documentation of this success will lead to further application of their methods to connect other fragments in the Sacramento River wildlife area. The monitoring component will clearly measure of the chances for successful sustainability of the restoration project.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   The project team is very well qualified to implement the project. They have good, relevant experience and good resources. I am somewhat unclear as to the exact work roles of hourly, temporary, and volunteers workers in doing the planting, but I assume they will be helping with the unskilled portions of those tasks.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   The budget is reasonable and adequate for this work. The thoroughness of the work requires large financial resources in order to adequately prepare soil, collect, propagate, and plant large quantities of plants in somewhat complex arrangements to quickly attain a desired plant community.

Miscellaneous comments:

It appears that the beneficial impacts to water quality will be best achieved if the other bank of that river also receives soil and plant conservation measures to maintain the banks. That point should not detract from this proposal, however. The specific goals listed in this proposal are well addressed by the proposed methods.

Prior Performance/Next Phase Funding: #1

New Proposal Number: 226

New Proposal Title: Drumheller Slough Habitat Restoration

1. Prior CALFED project numbers, titles, and programs: (*list only projects for which you are the contract manager*)

   01-N08, FWS, San Joaquin River National Wildlife Refuge Riparian Habitat Protection and Floodplain Restoration Project - Phase II 01-N11, FWS, Habitat Acquisition for Riparian Brush Rabbit and Riparian Woodrat Ecosystem Restoration

2. Prior CVPIA project numbers, titles, and programs: (*list only projects for which you are the contract manager*)

   N/A

3. Have negotiations about contracts or contact amendments with this applicant proceeded smoothly, without persistent difficulties related to standard contract terms and conditions?

   XYes **-**No **-**N/A

   If no, please explain any difficulties:

   Please note, NFWF does not have any direct Recipient Agreements with Sacramento River Partners, also listed as applicant.

4. Are the status, progress, and accomplishments of the applicant's current CALFED or CVPIA project(s) accurately stated?

   -Yes **-**No **-**N/A

   If no, please explain any inaccuracies:

   Applicant listed status of 97-N02 and 97-N03. TNC is the primary recipient for these projects. Status is accurate.

5. Is the applicant's progress towards these project(s)' milestones and outcomes to date satisfactory?

   -Yes **-**No **-**N/A

   If no, please explain deficiencies:

   Applicant is not the primary recipient of 97-N02 or 97-N03, however, status is accurate.

6. Is the applicant's reporting, records keeping, and financial management of these projects satisfactory?

   XYes **-**No **-**N/A

If no, please explain deficiencies:

7. Will the project(s) be ready for next phase funding in 2002, based on its current progress and expenditure rates?

   -Yes -No -N/A

   If no, please explain:

   This is a next phase of a project funded by CVPIA, for which NFWF was not project manager.

Other Comments:

Prior Performance/Next Phase Funding: #2

New Proposal Number: 226

New Proposal Title: Drumheller Slough Habitat Restoration

1. Prior CALFED project numbers, titles, and programs: (*list only projects for which you are the contract manager*)

2. Prior CVPIA project numbers, titles, and programs: (*list only projects for which you are the contract manager*)

   Pine Creek Orchards Acquisition- OFT (non-contract) Hartley Island- OFT (non-contract) Pine Creek Revegetation, 1160-97-J243 ERP La Barranca Feasibility Report, CVPIA 1162000J331 AFRP L&L/Hamilton, 11332-7-G030 Birkes, 11332-8-G124 Dana, 11332-8-G048 Latimer, 11332-8-G123 Deer Creek Fencing, 11332-0-G016 Eagle Canyon (Pelton) Ranch, 11332-0-G104 Leininger easement, 11332-7-G030

3. Have negotiations about contracts or contact amendments with this applicant proceeded smoothly, without persistent difficulties related to standard contract terms and conditions?

   -Yes -No **X**N/A

   If no, please explain any difficulties:

   AFRP provided funds for purchasing both land parcels and the La Barranca Feasibility Report through an OFT (Office Funding Target) transfers. As such there were no contracts in place other than this clients intent to acquire these major land parcels which were accomplished on time and within budget

4. Are the status, progress, and accomplishments of the applicant's current CALFED or CVPIA project(s) accurately stated?

   XYes -No -N/A

   If no, please explain any inaccuracies:

5. Is the applicant's progress towards these project(s)' milestones and outcomes to date satisfactory?

   XYes -No -N/A

   If no, please explain deficiencies:

6. Is the applicant's reporting, records keeping, and financial management of these projects satisfactory?

   XYes -No -N/A

If no, please explain deficiencies:

7. Will the project(s) be ready for next phase funding in 2002, based on its current progress and expenditure rates?

XYes **-**No **-**N/A

If no, please explain:

Other Comments:

Clients manage the FWS of the Sacramento River National Wildlife Refuge and have a strong record of successful land acquisitions and management.

Environmental Compliance:

Proposal Number: 226

Applicant Organization: US Fish and Wildlife Service

Proposal Title: Drumheller Slough Habitat Restoration

1. Are the legal or regulatory issues that affect the proposal identified adequately in the proposal?

   XYes **-**No

   If no, please explain:

   Figure 6, page 13.

2. Does the project's timeline and budget reflect adequate planning to address legal and regulatory issues that affect the proposal?

   -Yes **X**No

   If no, please explain:

   No time or funds are allocated to environmental compliance that is identified in Figure 6.

3. Do the legal and regulatory issues that affect the proposal significantly impair the project's feasibility?

   -Yes **X**No

   If yes, please explain:

Other Comments:

Budget:

Proposal Number: 226

Applicant Organization: US Fish and Wildlife Service

Proposal Title: Drumheller Slough Habitat Restoration

1. Does the proposal include a detailed budget for each year of requested support?

   XYes **-**No

   If no, please explain:

2. Does the proposal include a detailed budget for each task identified?

   XYes **-**No

   If no, please explain:

3. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs?

   XYes **-**No

   If no, please explain:

4. Are appropriate project management costs clearly identified?

   XYes **-**No

   If no, please explain:

5. Do the total funds requested (Form I, Question 17A) equal the combined total annual costs in the budget summary?

   -Yes **X**No

   If no, please explain (for example, are costs to be reimbursed by cost share funds included in the budget summary).

   Minor difference of $6 between 2 data fields.

6. Does the budget justification adequately explain major expenses?

   XYes **-**No

If no, please explain:

7. Are there other budget issues that warrant consideration?

   -Yes **X**No

   If yes, please explain:

Other Comments: